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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/619,968	07/15/2003	Byron Vencent Bell	2001-0699.08	7836

21972 7590 03/10/2004

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EXAMINER

BROOKE, MICHAEL S

ART UNIT PAPER NUMBER

2853

DATE MAILED: 03/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/619,968	<b>Applicant(s)</b> BELL ET AL. <i>AK</i>	
	<b>Examiner</b> Michael S. Brooke	<b>Art Unit</b> 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

**Claims 1-8, 10-17 and 20 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-19 of U.S. Patent No. 6,676,246 (Anderson et al.). Although the conflicting claims are not identical, they are not patentably distinct from each other because:**

With respect to claims 1, 3, 8 and 12-15, claim 10 of Anderson teaches using the length, width and thickness of the heater to calculate the ejection energy required to produce a stable droplet velocity.

With respect to claims 2 and 20, claim 10 of Anderson teaches ejecting the droplets.

With respect to claim 4, while the claims of Anderson do not specifically recite using the sheets resistance, since the calculation of the resistance uses both the heater

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and area and the heater thickness, the calculation would necessarily be based upon the sheet resistance of the heater.

With respect to claim 5, claim 10 of Anderson teaches applying a current pulse in order to achieve the desired energy range.

With respect to claim 6, claim 10 of Anderson teaches measuring a desired power per unit volume.

With respect to claim 7, while Anderson does not teach this specific formula, it is the Examiner's position that this formula is merely states known physical law that are written in terms of the sheet resistance. For example, the first term of the equation  $R_{\text{sheet}}/(WH^2)(TH)$  cancels out with the constant term  $(WH^2)(TH)/R_{\text{sheet}}$  that comes out of the integral. Thus, the equation simplifies to:

$$E = (1/m^3) \cdot \int PV \, dt.$$

Since  $P$  (watts) =  $dW/dt$ , where  $W$  (joules) is work, then  $\int P \, dt = W$ . Thus, the claimed equation merely express that fact that the integral of the power density ( $W/m^3$ ) is the energy density in ( $J/m^3$ ). If the Applicant asserts that these equation are Applicant's work product and not merely the restatement of known physical laws, then the Applicant should provide evidence of how these equations were derived and how they differ from the known equations.

With respect to claim 10, claim 10 of Anderson teaches that the thickness includes both the heater thickness and the thickness of the protective layer.

With respect to claim 11 and 16, claims 10 and 14 Anderson teach that the overcoat layer comprises multiple layers of protective material, which may be used as both passivation and cavitation layers.

With respect to claim 17, claims 10 and 15 of Anderson teach a heater area of about 300 to about 1100  $\mu^2$  and a thickness of about 500 to about 1500 angstroms.

**Claims 9, 18 and 19 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1-19 of U.S. Patent No. 6,676,246 (Anderson et al.) in view of Prasad et al. (6,309,052).**

Anderson et al. teaches the claimed invention with the exception of the ejection energy being in the range of from about 0.007 to about 1.19 microjoules

Prasad et al. teaches an ink jet printer having a heater (604, 608) with an area of 200 sq. microns and a thickness of 900 angstroms. The heater ejects an ink droplet using an ejection energy of 0.8 to 1.0 microjoules (col. 12:43). This provides the advantages of allowing more resistors to be used to increase printing resolution, while preventing an excessive build up of thermal energy (col. 11:11-23).

It would have been obvious to one of ordinary skill in the ink jet art, at the time the invention was made, to have provided Anderson with a heater having an ejection energy of about 0.007 to about 1.19 microjoules to eject an ink drop, in order to increase printing resolution, while prevent excessive heating of the head, as taught by Prasad et al.

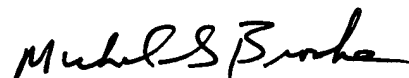
***Response to Arguments***

Applicant's arguments, filed 02/03/04, with respect to the rejection(s) of claim(s) 1-6 and 8-20 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Anderson et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael S. Brooke whose telephone number is (571) 272-2142. The examiner can normally be reached on M-F from 5:30 AM-2:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael S. Brooke  
Examiner  
Art Unit 2853